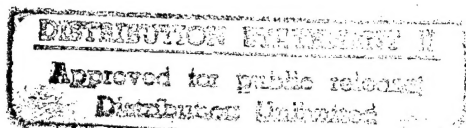


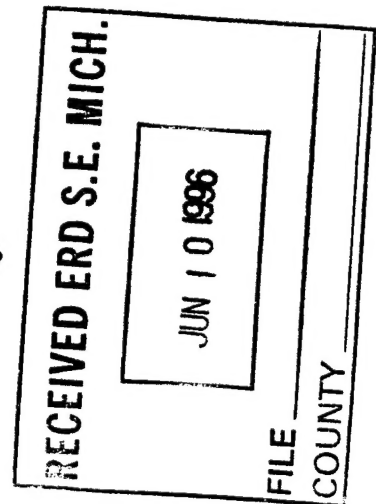
INSTALLATION RESTORATION PROGRAM

FINAL INSTALLATION RESTORATION PROGRAM DECISION DOCUMENT - SITE 16

ALPENA COMBAT READINESS TRAINING CENTER
MICHIGAN AIR NATIONAL GUARD
ALPENA COUNTY REGIONAL AIRPORT
ALPENA, MICHIGAN



MAY 1996



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HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Restoration and Waste Management Programs
Oak Ridge, Tennessee 37831-7606
managed by LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-84OR21400

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INSTALLATION RESTORATION PROGRAM
DECISION DOCUMENT - SITE 16

ALPENA COMBAT READINESS TRAINING CENTER
MICHIGAN AIR NATIONAL GUARD
ALPENA COUNTY REGIONAL AIRPORT
ALPENA, MICHIGAN

Submitted to:

AIR NATIONAL GUARD READINESS CENTER
ANDREWS AFB, MARYLAND

Submitted by:

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
Oak Ridge, Tennessee 37831

for the:

U.S. DEPARTMENT OF ENERGY

Prepared by:

EARTH TECH, Inc.
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May 1996

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Technical Document to Support No Further Action

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LIST OF ACRONYMS

bgs	below ground surface
cm/sec	centimeters per second
CRTC	Combat Readiness Training Center
DD	Decision Document
ft	feet
ft ² /day	square feet per day
HMTC	Hazardous Materials Technical Center
in	inches
IRP	Installation Restoration Program
m ² /day	square meters per day
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
NOAA	National Oceanic and Atmospheric Administration
PA	Preliminary Assessment
PP	priority pollutant
ppb	parts per billion
ppm	parts per million
SI	Site Investigation
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
VOC	volatile organic compound

1.0 INTRODUCTION

This Decision Document (DD) supports the no further action alternative for Site 16 - JP-4 Refueler Parking Apron at the Alpena Combat Readiness Training Center (CRTC) in Alpena, Michigan. The purpose of the DD is to summarize the existing data for the site and to describe the Air National Guard's rationale for selecting the no further action alternative. The objectives of the DD for Site 16 are:

- To briefly describe the location, history, and environmental setting of the Alpena CRTC, Site 16
- To summarize the results from previous Installation Restoration Program (IRP) investigations
- To describe the current status of the site based on the Abbreviated Site Investigation (SI) Report dated November 1993
- To assess the risk to human health and the environment.

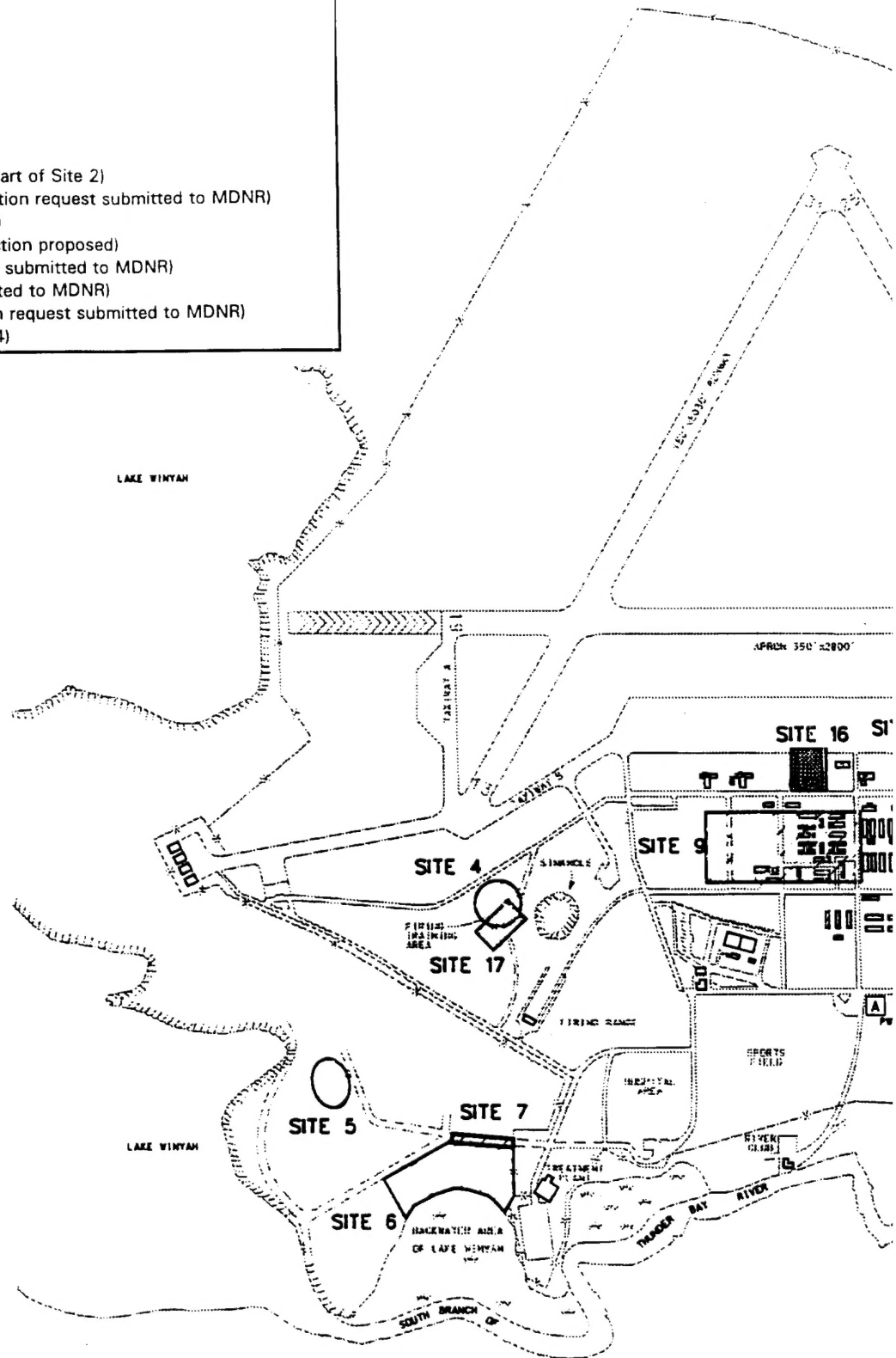
Data resulting from the following activities were used to derive and support the no further action alternative for Site 16: Preliminary Assessment (PA) by the Hazardous Materials Technical Center (HMTTC) (1985), and the Abbreviated SI by The Earth Technology Corporation (1993).

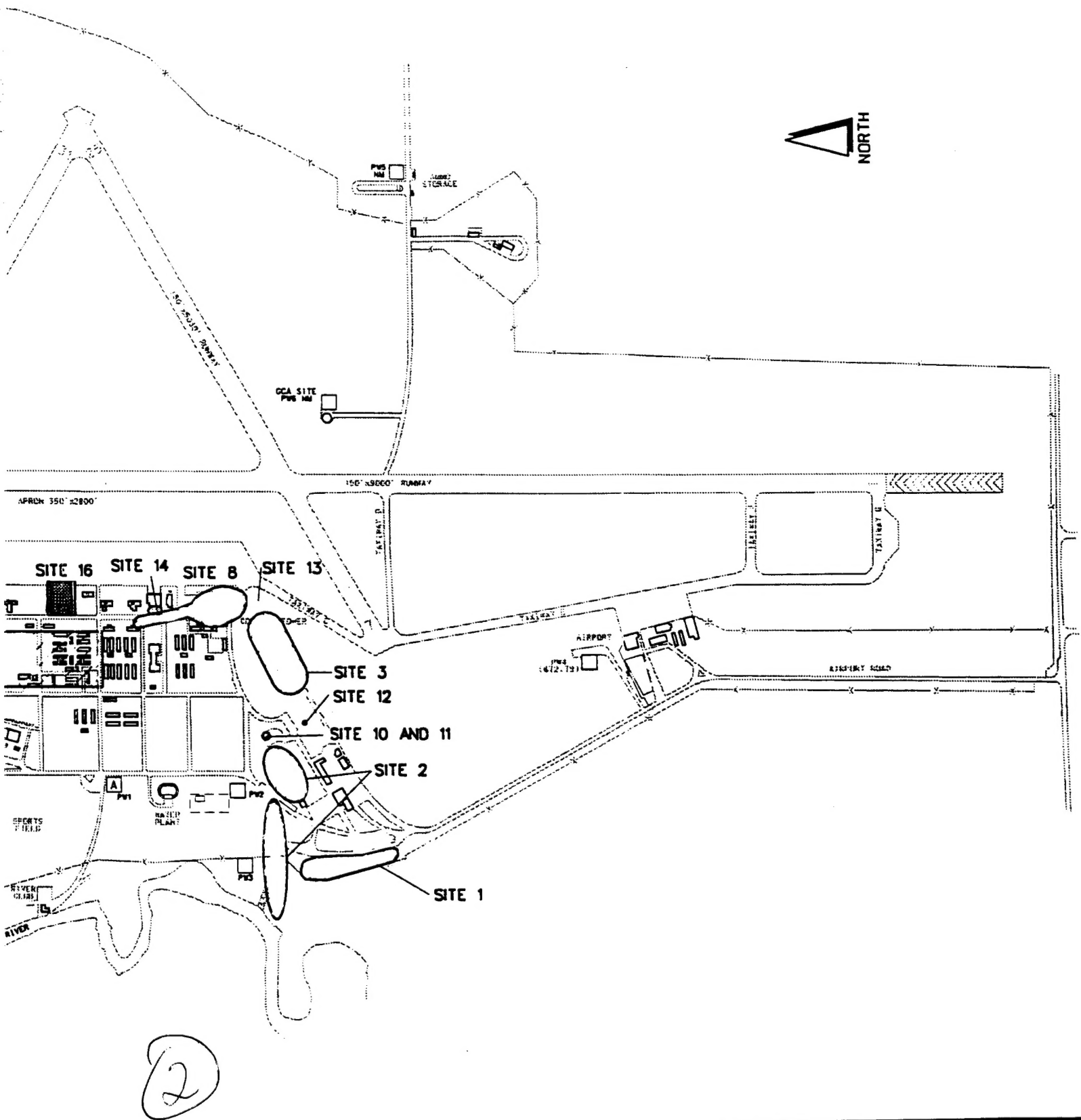
1.1 SITE LOCATION AND DESCRIPTION


The JP-4 Refueler Parking Apron, which served as a parking area for refueling trucks, is located on the west side of the base (see Figure 1-1). The runway apron is located immediately to the east of the site, Third Avenue borders the west side of the site. The site

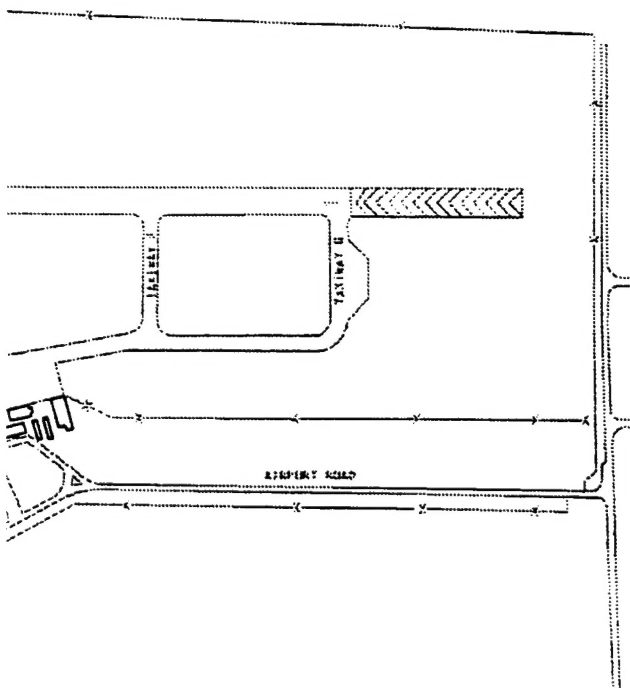
- Site 1 - POL Storage Area (RI Phase)
- Site 2 - Motor Pool Area (RI Phase)
- Site 3 - Former Site of County Garage (RI Phase)
- Site 4 - Third Fire Training Area (RI Phase)
- Site 5 - Second Fire Training Area (RI Phase)
- Site 6 - Former Solid Waste Landfill (RI Phase)
- Site 7 - First Fire Training Area (RI Phase)
- Site 8 - Former Site of Hanger 9 (RI Phase)
- Site 9 - Radar Tower Site (RI Phase)
- Site 10 - Hazardous Waste Storage Area (RI Phase as part of Site 2)
- Site 11 - Underground Fuel Storage Area (no further action request submitted to MDNR)
- Site 12 - Salt Storage Area (no further action proposed)
- Site 13 - Mound Area Next to Taxiway C (no further action proposed)
- Site 14 - UST by Fire Station (no further action request submitted to MDNR)
- Site 15 - Oiled Roads (no further action request submitted to MDNR)
- Site 16 - JP-4 Refueler Parking Apron (no further action request submitted to MDNR)
- Site 17 - Old Kitchen Landfill (RI Phase as part of Site 4)

①





	PROJECT NO. MIANG Alpena CRTC Alpena, Michigan
DRAFT <h1>LOCATIONS OF IRP SITES</h1> 11-95 Figure	



3

 The Earth Technology
Corporation

PROJECT NO. MIANG 928901
Alpena CRTC
Alpena, Michigan

DRAFT

LOCATIONS OF IRP SITES

11-95

Figure 1-1

surrounds Building 22 (see Figure 1-2), is paved, and drains to the west. Immediately north and south of the site boundaries are grass-covered areas. The site measures approximately 1,000 square ft.

Adjacent Land Uses

The Alpena CRTC is surrounded by land used primarily for farming, forestry, and tourism. The Alpena County Regional Airport is immediately adjacent to the base, as they share use of approximately 1,755 acres. East of the site is the runway apron. The areas north, west, and south of Site 16 are developed with roads, buildings, and lawns.

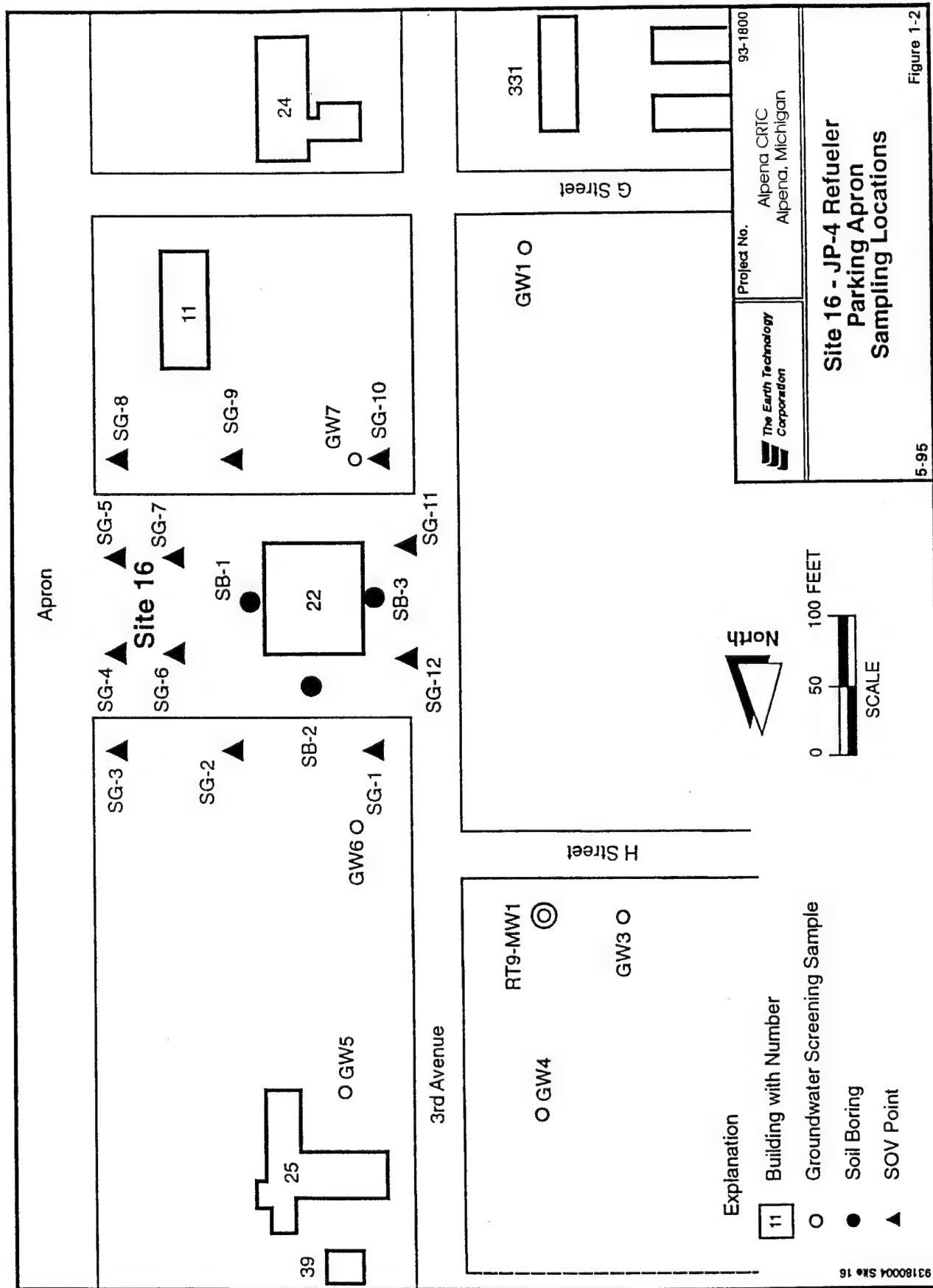
Nearby Population

The Alpena CRTC is located in a rural area with both low population density and growth rates. The nearest residence to this site is located over 2 miles from the base. Approximately 75 full-time employees are located on-base. There is no permanent housing. During the months of April through September, training sessions are held. These sessions last for 2 weeks during which time personnel are housed on-base.

The base is surrounded by forest, wetlands, and rivers. A considerable number of wildlife species are observed on-base. The Michigan Department of Natural Resources (MDNR) [currently the Michigan Department of Environmental Quality (MDEQ)] (MDNR, April 1994) and the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service, February 1994) have reported that no threatened or endangered species reside within the boundaries of the CRTC. There are no wetlands within, or adjacent to, the site boundaries.

Surface and Groundwater Resources

The Alpena CRTC is located within the Northwestern Lake Huron Water-Resources Subregion (Miller and Twenter, 1986). The southern shore of Lake Winyah, formed by a hydroelectric dam on the Thunder Bay River, borders the base on the north. The south branch of the Thunder Bay River borders the base on the west. From Lake Winyah, the Thunder Bay River



flows southeast toward Lake Besser and on to Lake Huron. The water ways in the vicinity of the facility are used for recreational purposes and as a water source. The city of Alpena gets its water supply from Lake Huron. Alpena Township and the CRTC purchase water from the city of Alpena. The water supply intake is located approximately 1.5 miles southwest of the mouth of the Thunder Bay River, approximately 11 miles downstream from the facility.

The hydrogeologic units of interest on the facility are the lacustrine sand (shallow aquifer), the Traverse Group Limestone, and the grey clay aquitard which locally occur between the two aquifers. Hydrologically, the base is located in the recharge area of the shallow aquifer. The water table in the surficial aquifer is variable over the base, ranging from approximately 5 ft below ground surface (bgs) to approximately 25 to 30 ft bgs. Groundwater beneath the Site 16 area flows northwest toward the sinkhole.

1.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

History

According to available information, various aircraft refueling operations were conducted at the JP-4 Refueling Parking Apron. Spills from refueling operations were reportedly hosed from the concrete apron onto the ground surface immediately adjacent to the paved parking area.

Site 16 was identified in the PA conducted by HMTc (1985). PA activities included a detailed review of pertinent installation records and on-site visits which included interviews with past and present employees. According to employee interviews, no fuels had been released and the PA reported no visual evidence of spills or leaks at the site. The PA concluded that since the site posed little or no environmental threat, the Hazard Assessment Rating was unnecessary and no further action was recommended.

Regulatory Agency/Public Involvement

A DD was submitted in 1991 to the MDNR/MDEQ for Site 16 stating the site exhibited no potential for contaminant migration. As requested by the MDNR/MDEQ in their review of the Site 16 DD, an SI was conducted to confirm the presence or absence of contamination at Site 16. SI activities included the advancement and sampling of soil borings SB01, SB02, and SB03 which were located adjacent to Building 22 (Figure 1-2).

Laboratory analyses conducted for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), priority pollutant (PP) metals, and total petroleum hydrocarbons (TPH) indicated no organic compounds or inorganic analytes were present in the soil at concentrations exceeding Act 451, Part 201 generic residential cleanup criteria.

1.3 COMMUNITY PARTICIPATION

There has been no community involvement in the IRP investigation conducted at Site 16 (JP-4 Refueling Parking Apron) at the CRTC, Alpena, Michigan.

2.0 CURRENT SITE STATUS

The following summary of site characteristics includes a description of the environmental setting as well as the results of any sampling performed at the site.

2.1 PHYSIOGRAPHY AND CLIMATOLOGY

The Alpena CRTC is located in an area created by glacial activity, sinkhole (karst) development, and human activities. Glacial activity has resulted in the deposition of lake deposits consisting of sand and clay on a relatively flat surface. A large sinkhole, located north of Site 16, is a significant feature affecting the hydrology of the base (Figure 1-1). The general land surface elevations on base vary between a low of 672 ft above mean sea level to a high of 688 ft above mean sea level.

The climate is characterized as semi-maritime and is affected by the proximity of Lake Huron to the east, which modifies most weather extremes. Summers are warm and sunny while winters are cloudy and snow is common. The precipitation in the area is evenly distributed throughout the year. The mean annual precipitation for the 29-year period beginning in 1957 is 29.15 in. [National Oceanic and Atmospheric Administration (NOAA), 1987]. The estimated mean annual lake evaporation rate for the area is 26 in. (NOAA, 1983). Net annual precipitation is estimated at 3 in. for the time period of 1957 to 1986. The 1-year 24-hour rainfall event for the area is estimated to be 1.75 in. (NOAA, 1963).

2.2 GEOLOGY AND SOIL

The Alpena CRTC is located in the outcrop area of the lacustrine sand of northeast Michigan. The lacustrine sand is composed of quartz sand, pebbles, cobbles of limestone and rock fragments, and some lenses of reddish-brown clay. This unit varies in thickness from approximately 20 ft at the north end of the base near Lake Winyah, to approximately 60 ft

at the southern end of the base. The lacustrine sand is underlain by the Devonian ages Traverse Group Limestone, which is described as a grey fossiliferous limestone, containing some chert (Black, 1983). In some locations this lacustrine sand directly overlies the limestone aquifer and in other locations is separated from the limestone aquifer by a grey clay aquitard.

Soil organic vapor screening samples were collected at 70 ft grid intervals at Site 16 and were analyzed for total volatiles (as JP-4). Soil gas results indicated the presence of JP-4 volatiles at low concentrations, between less than 10 ppm and 20 ppm, at all sample points as shown in Table A-1 in Appendix A.

Seven soil samples were collected from three soil borings at Site 16. All the samples were screened using a photoionization detector. Sample locations were placed where contamination was considered most likely to be encountered. Since no significant concentrations of contamination were detected during the soil gas survey, the soil borings were placed at locations which would be representative of the site and might identify possible migration pathways. At soil boring location SB01, a soil sample was collected and logged from 1 to 2 and 15 to 17 ft bgs. At the second soil boring location (SB02), a soil sample was collected and logged from 1 to 2 and 14 to 16 ft bgs. Three soil samples were collected and logged at SB03 from 1 to 3, 5 to 7, and 14 to 16 ft bgs. Sampling depths were based upon ANG protocols which call for a sample from just below the ground surface and the second from unsaturated soils just above the water table. The third sample at SB03 was collected to complete a vertical profile.

The material encountered in these borings consisted of a fine- to medium-grained sand.

Laboratory analytical results found no VOCs, SVOCs, or PP metals in concentrations above Act 451, Part 201 generic residential cleanup criteria (see Table 2-1). TPH was detected in all seven soil samples in concentrations ranging from 22.5 ppm to 73.3 ppm. No Act 451, Part 201 generic residential cleanup criteria have been established for TPH.

**Table 2-1 Data Summary Table: Soils Site 16 - JP-4 Refueling Parking Apron
MIANG, Alpena CRTC, Alpena, Michigan**

Sample Number:	P16B010102	P16B011516	P16B020102	P16B021214
Site:	PC-16	PC-16	PC-16	PC-16
Locator:	SB01	SB01	SB02	SB02
Depth (ft):	1 to 2	15 to 16	1 to 2	12 to 14
Date Sampled:	Nov-10-92	Nov-10-92	Nov-10-92	Nov-10-92
Associated QC Samples:	EB-1, P-TB1, FB1, FB2	EB-1, P-TB1, FB1, FB2	EB-1, P-TB1, FB1, FB2	EB-1, P-TB1, FB1, FB2
Method: 418.100, mg/kg				
Total Petroleum Hydrocarbons	22.5	26	23.7	19.9
Method: 8010, ug/kg				
1,1,1-Trichloroethane	.78 U	.31 J	.13 J	.19 B
Chloroethane	2.7 U	3.1 U	2.7 U	2.6 U
Methylene Chloride	2.9 B	2.1 B	7.4 U	4.8 J
t-1,2-Dichloroethene	1.1 U	1.3 U	1.1 U	1.1 U
Method: 8020, ug/kg				
1,2-Dichlorobenzene	1.4 U	1.7 U	.087 J	1.4 U
1,4-Dichlorobenzene	1.8 U	.11 J	.67 B	.4 B
Methyl-t-butyl ether	.43 J	.44 J	11 U	11 U
Method SW 846, mg/kg				
Arsenic	.61 I]	.48 U	.41 U	.42 I]
Chromium	4.4	2.1	3.7	3.4
Chromium(3)	0.720	0.380	0.648	0.587
Lead	2.3	.98	.53	.79
Total Chromium	0.72	0.380	0.648	0.587
Zinc	7.1 B	3.6 B	4.6 B	4 B
				47

Note: Chromium(3), Chromium(6), and Total Chromium were calculated from extract concentrations. No Chromium(6) was detected.

** Act 451, Part 201 generic residential cleanup criteria.

U - Not detected. Value listed in detection limit. B - Not detected. Compound found in blank samples.

I] - Concentration is between the Practical Quantitation Limit and the Instrument Detection Limit.

J - Concentration is estimated.

**Table 2-1 (continued) Data Summary Table: Soils Site 16 - JP-4 Refueling Parking Apron
MIANG, Alpena CRTC, Alpena, Michigan**

Sample Number:	P16B030103	P16B030507	P16B031416	P16B031820 (duplicate of B031416)
Site:	PC-16	PC-16	PC-16	PC-16
Locator:	SB03	SB03	SB03	SB03
Depth (ft):	1 to 3	5 to 7	14 to 16	18 to 20
Date Sampled:	Nov-11-92	Nov-11-92	Nov-11-92	Nov-11-92
Associated QC Samples:	EB-1, P-TB1, FB1, FB2	EB-1, P-TB1, FB1, FB2	EB-1, P-TB1, FB1, FB2	EB-1, P-TB1, FB1, FB2
Method: 418.100, MG/KG				
Total Petroleum Hydrocarbons	28.2	73.3	23.2	23.1
Method: 8010, UG/KG				
1,1,1-Trichloroethane	.22 U	2.8 U	3.3 U	.2 U
Chloroethane	2.7 J	2.7 U	3.2 U	3.1 U
Methylene Chloride	2.7 B	4 B	23 J	3.3 B
t-1,2-Dichloroethane	1.2	1.1 U	1.3 U	1.3 U
Method: 8020, UG/KG				
1,2-Dichlorobenzene	.13 J	.26	1.2 B	.13 B
1,4-Dichlorobenzene	1.9 U	1.8 U	2.2 U	2.1 U
Methyl-t-butyl ether	12 U	.23 J	13 U	.3 B
Method SW 846, MG/KG				
Arsenic	1.1	.48 I	.72 I	.71 I
Chromium	5	2.5	2.2	2.7
Chromium(3)	0.811	0.463	0.338	0.426
Lead	2.3	.98	1.3	1.1
Total Chromium	0.811	0.463	0.338	0.426
Zinc	8.6	5.3 B	4.7 B	4.8 B
				47

Note: Chromium(3), Chromium(6), and Total Chromium were calculated from extract concentrations. No Chromium(6) was detected.

** Act 451, Part 201 generic residential cleanup criteria. Cleanup criteria for metals are acceptable default values.

U - Not detected. Value listed in detection limit. B - Not detected. Compound found in blank samples.

I - Concentration is between the Practical Quantitation Limit and the Instrument Detection Limit.

J - Concentration is estimated.

2.3 HYDROGEOLOGY

Beneath the Alpena CRTC, groundwater occurs in both the lacustrine sand and limestone aquifers. A feature unique to the installation is the development of a large sinkhole in the north-central portion of the CRTC. Groundwater flow in the lacustrine aquifer generally moves toward the sinkhole, although groundwater flows towards the Thunder Bay River in some places on the installation. Groundwater flow direction within the limestone aquifer is unknown. Hydraulic characteristics vary greatly across the base. The hydraulic conductivity in the Site 16 area varies from 4.09×10^{-2} to 1.71×10^{-1} cm/sec. The transmissivity across the base varies from an average low of 11 m²/day (118 ft²/day) to an average high of 579 m²/day (6,237 ft²/day).

Groundwater screening sampling locations at Site 9 were used to determine groundwater conditions at Site 16 because Site 9 is close to Site 16. The groundwater samples for Site 9 (9GW-1, 9GW-3, 9GW-4, 9GW-5, 9GW-6, and 9GW-7) were believed to be representative of the groundwater quality downgradient of Site 16. Groundwater was encountered between 15 and 18 ft bgs. Of the six samples collected, only 9GW-6 contained total VOCs at a concentration of 23 ppb (see Table A-1 in Appendix A). No benzene, toluene, ethylbenzene, xylene, or chlorinated hydrocarbon concentrations were detected above the method detection limits as shown in Table A-2 in Appendix A.

No confirmational groundwater sampling was conducted at Site 16 because the focus of the Abbreviated SI was to confirm the absence or presence of contaminants in the soil. Had the soil gas and groundwater screening or soil confirmational sampling activities indicated significant levels of hydrocarbons indicative of contamination from JP-4 spills, further site investigation would have been recommended.

2.4 SURFACE WATER

Few man-made surface drainage ditches or storm drains are located on-base because the majority of the soils have fair to very rapid infiltration rates. One storm drain is located within

the motor pool area. A prominent ditch west of the motor pool area drains surface water runoff toward the Thunder Bay River.

Because no surface water bodies are present or adjacent to Site 16, surface water and sediment sampling were not conducted.

2.5 AIR

No air monitoring has been conducted at Site 16 except for field screening. The six soil samples were scanned with a photoionization meter for VOC concentrations during drilling operations. No VOCs were detected above background concentrations during air monitoring.

2.6 RECEPTORS

Because a potential contamination source has not been identified, it was not necessary to identify potential receptors.

3.0 RISK ASSESSMENT

The only contaminant detected in Site 16 soils was TPH at low concentrations, between less than 10 ppm and 20 ppm at all sample points throughout the site. No Act 451, Part 201 generic residential cleanup criteria for TPH has been established. The soil gas screening samples collected from locations adjacent to Site 16 did not detect any hydrocarbons. Groundwater screening conducted at Site 9, with sampling locations near Site 16 and therefore believed to be representative of the groundwater quality at Site 16, found only one sample (9GW-6) contained total volatiles (as JP-4) at a concentration of 23 ppb. There is little evidence that either human health or the environment are at risk by Site 16 conditions. Therefore, no risk assessment has been conducted.

4.0 SELECTED ACTION: NO FURTHER ACTION

The risk to human health and the environment from Site 16 is low. The no further action alternative is proposed on the basis that no evidence exists to suggest the groundwater, surface water, soil, or air are sufficiently contaminated to pose a threat to human health or the environment. Current site conditions and environmental testing data indicate that no further action is warranted at Site 16.

5.0 DECISION

TECHNICAL DOCUMENT TO SUPPORT NO FURTHER ACTION DECLARATION

SITE NAME AND LOCATION

Installation Restoration Program Site
Site 16 - JP-4 Refueler Parking Apron
Alpena Combat Readiness Training Center, Alpena, Michigan

STATEMENT OF BASIS


This decision is based on the results of the Installation Restoration Program (IRP) Phase I Records Search and the Phase II Abbreviated Site Investigation studies. The results of these activities are documented in the Abbreviated Site Investigation Report (The Earth Technology Corporation, November 1993).

DESCRIPTION OF THE SELECTED REMEDY

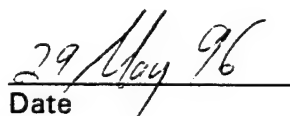
Based on the current conditions at IRP Site 16, it has been determined that no significant risk or threat to public health or the environment exists. Therefore, no further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, is required.

DECLARATION

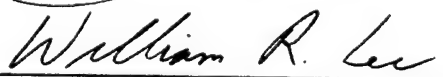
This Decision Document represents the selected action for this site developed in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Contingency Plan. It also satisfies the requirements of the National Environmental Policy Act that apply to CERCLA response actions. It has been determined that the selected remedy of no further action is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate, and is cost effective. The statutory preference for further treatment is not satisfied because further treatment was not found to be necessary. Contaminant levels at the site have been determined to present no significant threat to human health or the environment; thus, no treatment is necessary.



Chief, Environmental Division



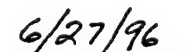
Date



State Regulatory Agency Representative
MDEQ-ERD



Concur/Nonconcur



Date

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APPENDIX A

Screening Data

**Table A-1 Soil Gas and Groundwater Screening
JP-4 Standard Data**

Soil Gas Sample I.D.	Depth (ft)	JP-4 (ppm)
16SG-1	3	17
16SG-1	6	19
16SG-1	9	<10
16SG-2	9	11
16SG-3	9	<10
16SG-4	9	<10
16SG-5	6	<10
16SG-6	6	13
16SG-7	6	<10
16SG-8	6	<10
16SG-9	6	10
16SG-10	6	<10
16SG-11	6	<10
16-SG-12	6	<10
Groundwater Sample I.D.	Depth (ft)	JP-4 (ppb)
9GW-5	15-21	<22
9GW-6	18-21	23
9GW-7	15-21	<22
9GW-1	18-21	<22
9GW-3	18-21	<22
9GW-4	18-21	<22

Source: EnviroSurv, Inc. Screening Results

**Table A-2 Groundwater Screening
Target VOC Data (ppb)**

Soil Gas Sample No.	1,1-DCE	t-1,2-DCE	c-1,2-DCE	1,1,1-TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes
9GW-1-18-21	<0.5	<0.5	<1.0	<0.05	<0.05	<0.05	<5.0	<5.0	<5.0	<5.0
9GW-3-18-21	<0.5	<0.5	<1.0	<0.05	<0.05	<0.05	<5.0	<5.0	<5.0	<5.0
9GW-4-18-21	<0.5	<0.5	<1.0	<0.05	<0.05	<0.05	<5.0	<5.0	<5.0	<5.0
9GW-5-18-21	<0.5	<0.5	<1.0	<0.05	<0.05	<0.05	<5.0	<5.0	<5.0	<5.0
9GW-6-18-21	<0.5	<0.5	<1.0	<0.05	trace	trace	<5.0	<5.0	<5.0	<5.0
9GW-7-18-21	<0.5	<0.5	<1.0	<0.05	<0.05	<0.05	<5.0	<5.0	<5.0	<5.0

Source: EnviroSurv, Inc. Screening Results